

Disassembly & Reassembly Instructions Large Bore Valves – High Pressure

Rev.05

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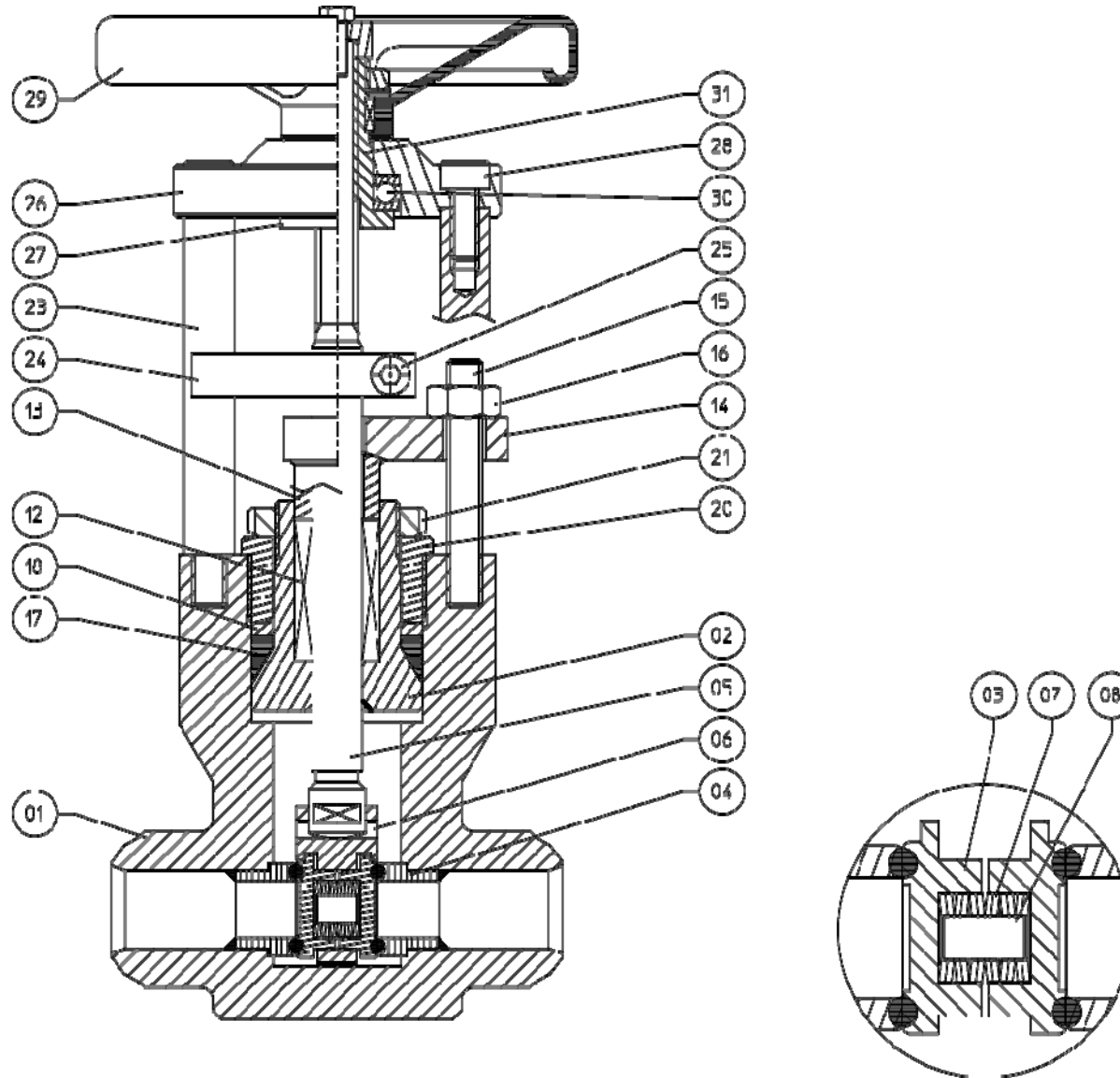


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LBV HP PSGV ≤ 2" AND ≥ 1500 LBS.

DISASSEMBLY & ASSEMBLY PARALLEL SLIDE GATE VALVE
 ≤ 2" AND ≥ 1500 LBS.



DISASSEMBLY & ASSEMBLY PARALLEL SLIDE GATE VALVE

≤ 2" AND ≥ 1500 LBS.

1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. For manual operated valves remove hand wheel nut, hand wheel (29) and parallel key.
For valves fitted with a Gearbox or Electric Actuator, remove the Actuator, by unscrewing the bolts from the lower side of the yoke flange (26).
3. Unscrew the bolts (28) from the yoke flange (26).
4. For manual operated valves screw the yoke sleeve (27) together with the needle bearings (30) from the stem (05).
5. Loosen the bolts (25) from the guiding plate (24) and remove it. Unscrew the yoke bars (23) out of the valve body (01). Unscrew gland bolting/nuts (15 & 16) and remove them. Remove the gland (14) and packing follower (13).
6. Unscrew the nut (21) from the bonnet (02) and unscrew the lock nut (20) from the body (01), while securing the stem (05) in place in order to prevent it from damaging.
7. After the lock nut (20) has been removed, lower the stem (05) and bonnet (02) down into the body (01). Now remove the spacer ring (18) and gasket (17), together with the bonnet (02) and stem (05), by pulling the stem (05) out of the valve body (01).
8. Dis-assemble the "disc assembly" by removing the pin from the disc holder (06). Afterwards you can rotate the first disc-part (03) 90°, so the lip will clear the disc holder (06).

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts for signs of damage, i.e. pitting, erosion or scratches:
 - A. SEAT (04) - Sealing surface
 - B. STEM (05) - Packing area
 - C. DISC(S) (03) - Sealing surface
 - D. BONNET (02) – Sealing surface



**IN CASE SEVERE DAMAGE IS OBSERVED,
USE REPLACEMENT PARTS INSTEAD!**

3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Install the first disc (03) into the disc holder (06) and rotate the disc 90° in order to secure it, slide the conical springs (07) over the guide pin (08) and place the pin into the corresponding socket located in the first disc (03). Afterwards place the second disc (03) and rotate it 90° as well, now install the pin to finalise the complete disc assembly.
5. Slide the complete disc assembly (06) onto the stem (05).
6. Place the bonnet (02) over the stem (05). Install a **NEW** gasket (17) into the valve body (01), with the spacer ring (18) on top of it.
7. Screw the lock nut (20) into the valve body (01). Pull the stem (05) towards the top of the valve and screw the nut (21) loose onto the bonnet (02). Screw the bolts (22) into the lock nut (21) and tighten them.
8. Place the **NEW** packing (12) over the stem (05) into the bonnet (02). Place the packing follower (13) over the stem (05). Place the gland (14) over the stem (05) and install the gland bolting (15). Evenly tighten the nuts (16) preventing contact between the stem (05) & packing follower (13).
9. Screw the yoke bars (23) into the valve body (01) as indicated. Place the guiding plate (24) on the designated area located at the stem (05) . Secure the guiding plate (24) with the bolting (25).
10. For manual operated valves screw the yoke sleeve (27) together with the needle bearing(s) (30) on the stem (05).
11. Place the yoke flange (26) on top of the yoke bars (23) and secure them with the hexagon socket bolts (28).
12. For manual operated valves turn the yoke sleeve (27) against the yoke flange (26), place the parallel key and handwheel (29) and secure it with the handwheel nut.
13. Pressurise the system and check the packing (12) and bonnet (02) for signs leakage.



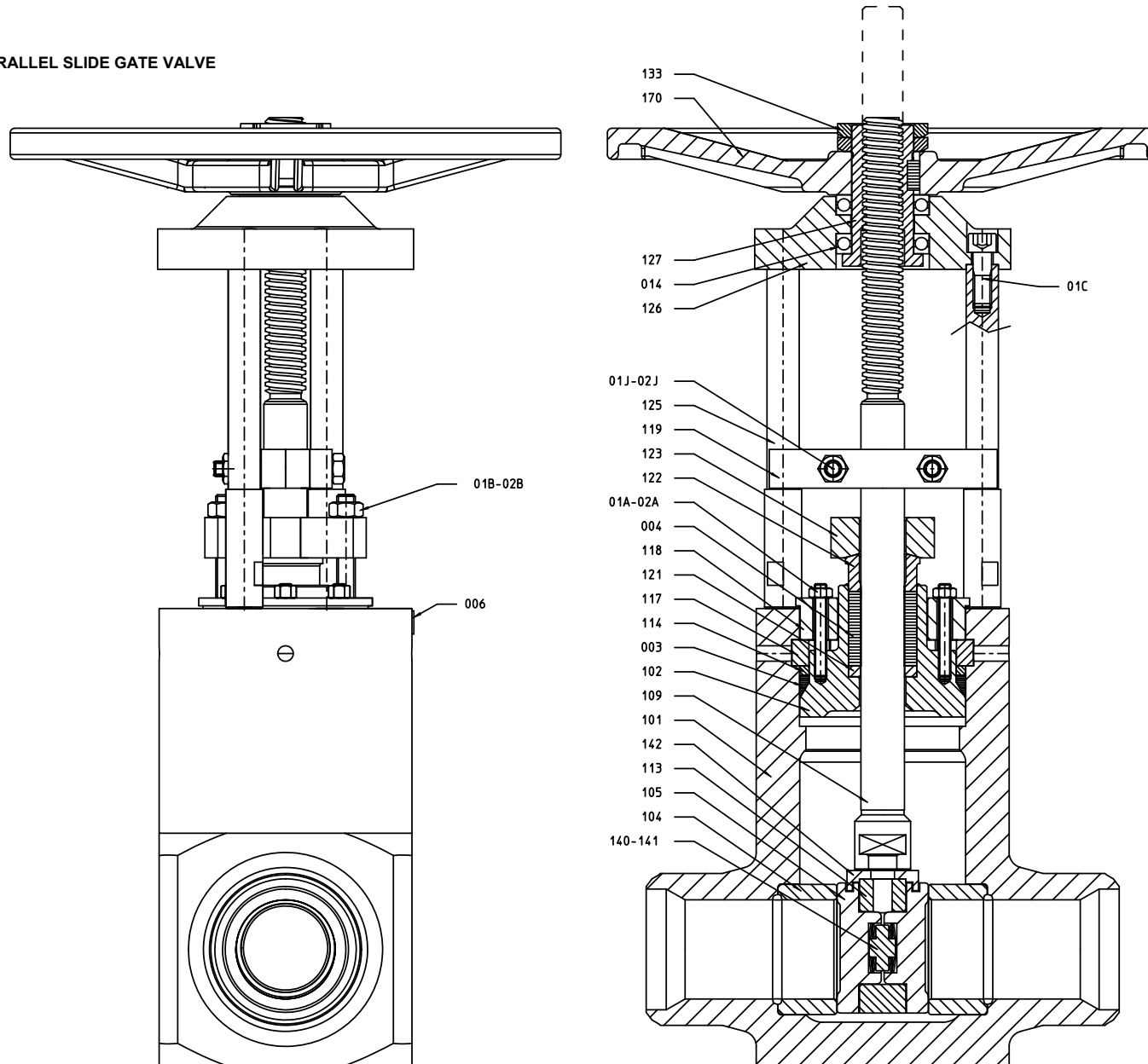
Important:

After starting up the system, once the valve has reached its working temperature and pressure, it is recommended to tighten the bolts (22) into the retaining ring (21) to force the bonnet into the gasket (17) for optimum sealing.

14. In case leakage is observed through the packing (12), tighten the nuts (16) of the gland bolts (15) carefully until the leaking stops. In case leakage through the bonnet (02) is observed, tighten the bolts (22) located in the lock nut (21).
15. The valve is now ready for use.

DISASSEMBLY & ASSEMBLY PARALLEL SLIDE GATE VALVE
 2½" & 3" AND ≥ 900 LBS.

LBV HP 2½" / 3" AND ≥ 900 LBS



DISASSEMBLY & ASSEMBLY PARALLEL SLIDE GATE VALVE

2½" & 3" AND ≥ 900 LBS.

1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. For manual operated valves remove hand wheel nut (133), hand wheel (170), parallel key and needle bearing (014).
For valves with a Gearbox or Electric Actuator, remove the Actuator, by unscrewing the bolts from the lower side of the yoke flange (126).
3. Unscrew the hexagon socket screws (01C) from the top flange (126).
4. For manual operated valves screw the yoke sleeve (127) together with the needle bearing (014) from the stem (109).
5. Unscrew the pillars (125) from the valve body (101). Loosen the bolts (01J-02J) from the guiding plate (119) and remove it. Unscrew gland bolting/nuts (01B-02B) and remove them. Remove the gland (123) and packing follower (122).
9. Unscrew the bolts (01A-02A) from the retaining ring (118) and remove the retaining ring (118) from the bonnet (102), while securing the stem (109) in place in order to prevent it from damaging.
10. After the retaining ring (118) is removed, lower the stem (109) and bonnet (102) down into the body (101). Now remove the segmental ring (117) by tapping a punch tool through the designated disassembly holes provided in the bonnet area of the valve body (101), afterwards the gasket ring (114) and gasket (003), together with the bonnet (102) and stem (109) can be removed, by pulling the stem (109) from the valve body (101).
11. Dis-assemble the "disc assembly" by unscrewing the disc holder (113) from the stem (109). Afterwards remove the disc hanger (142) and take the discs (105) out of the disc holder (113).

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts for signs of damage, i.e. pitting, erosion or scratches:
 - A. SEATS (104) - Sealing surface
 - B. STEM (109) - Packing area
 - C. DISCS (105) - Sealing surface
 - D. BONNET (102) – Sealing surface



**IN CASE SEVERE DAMAGE IS OBSERVED,
USE REPLACEMENT PARTS INSTEAD!**

3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Install the first disc (105) into the disc holder (113) and mount the disc hanger (142) in the designated slot located in the disc (105) slide the conical springs (140) over the guide pin (141) and place the pin assembly into the corresponding socket located in the first disc (105). Afterwards place the second disc (105) and lower the disc hanger (142) in the designated slot located in the disc (105), now install the stem (109) into the disc holder (113) to finalise the complete disc assembly.
5. Place the stem (109) and disc assembly (113) in the valve body (101), make sure the seats (104) are not damaged during this process.
6. Place the bonnet (102) over the stem (109). Install a **NEW** gasket (003) into the valve body (101), with the gasket ring (114) on top of it.
7. Install the segmental ring (117) in the designated area located in the valve body (101), Make sure the segments are located at such place, there is a segment placed in front of each disassembly hole.
8. Pull the stem (109) towards the top of the valve and lower the retaining ring (118) into the valve body (101). Screw the bolts (01A-02A) into the bonnet (102) and tighten them.
9. Place packing (004) over the stem (109) into the bonnet (102). Place the packing follower (122) over the stem (109) and install the gland flange (123) over the stem (109). Now install the gland bolting (01B-02B) and evenly tighten the nuts (02B) preventing contact between the stem (109) & packing follower (122).
10. place the guiding plate (119) on the designated area located at the stem (109) and secure the guiding plate (119) with the bolting (01J-02J).
11. Screw the yoke bars (125) into the valve body (101).
12. For manual operated valves screw the yoke sleeve (127) together with the needle bearing(s) (014) on the stem (109).
13. Place the yoke flange (126) on top of the yoke bars (125) and secure them with the hexagon socket bolts (01C).
14. For manual operated valves rotate the yoke sleeve (127) against the yoke flange (126), place the needle bearing (014), parallel key, handwheel (170) and secure it with the handwheel nut (133).
15. Pressurise the system and check the packing (004) and bonnet (102) for signs of leakage.



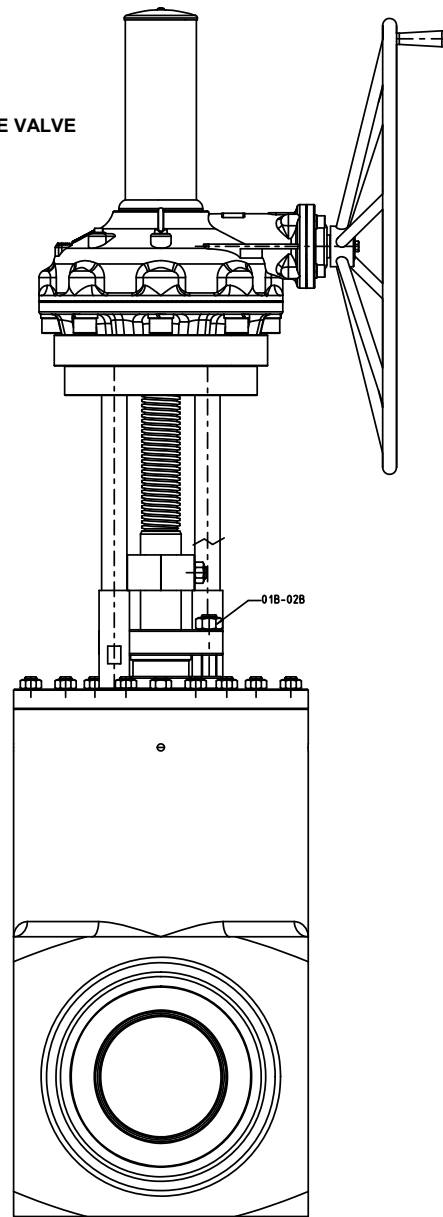
Important:

After starting up the system, once the valve has reached its working temperature and pressure, It is recommended to tighten the bolts (01A-02A) into the retaining ring (118) to force the bonnet (102) into the gasket (003) for optimum sealing.

16. In case leakage is observed through the packing (004), tighten the nuts (01B-02B) carefully until the leaking stops. In case leakage through the bonnet (102) is observed, tighten the bolts (01A-02A) located in retaining ring (118).
17. The valve is now ready for use.

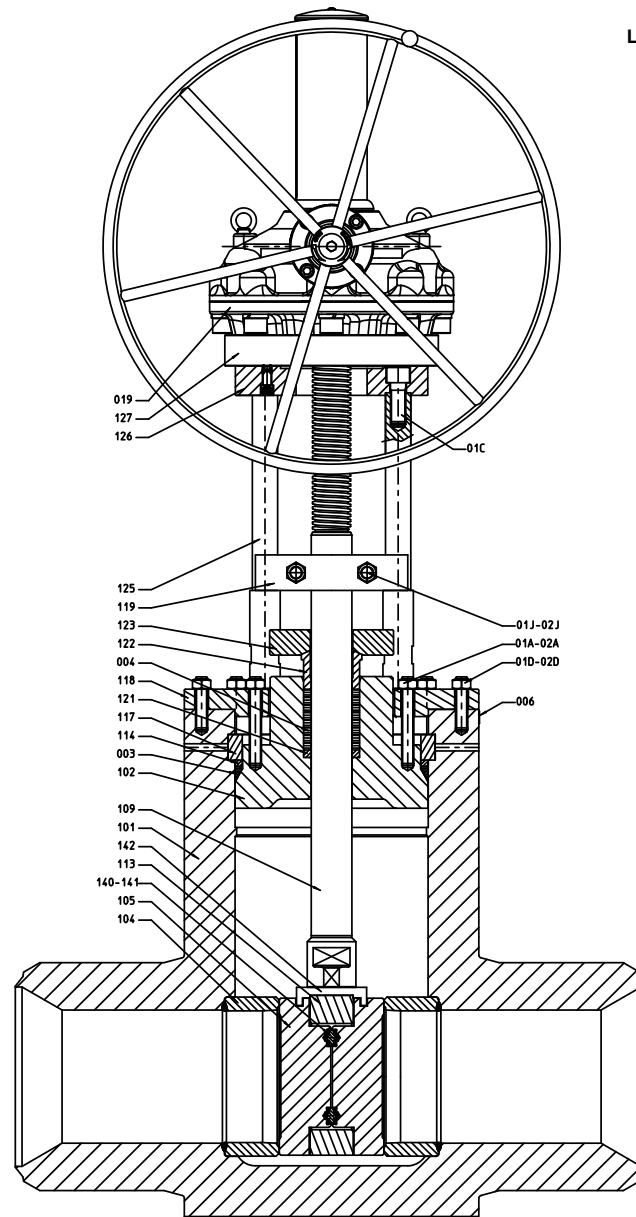


DISASSEMBLY & ASSEMBLY PARALLEL SLIDE GATE VALVE
≥ 4" AND ≥ 900 LBS.



HP Valves Oldenzaal BV
Medium & high pressure valves
in accordance with ASME, EN, BS and API

LBV HP ≥ 4" AND ≥ 900 LBS.



DISASSEMBLY & ASSEMBLY PARALLEL SLIDE GATE VALVE

≥ 4" AND ≥ 900 LBS.

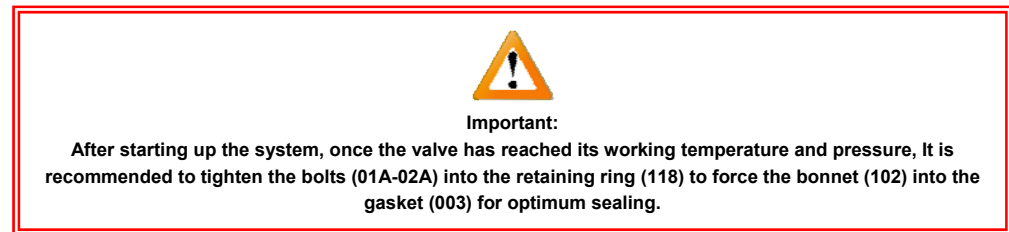
1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. For gearbox / motor operated valves remove the gearbox / actuator (019), by unscrewing the bolts from the lower side of the adapter plate (127) and rotating the gearbox / actuator (019) clockwise to unscrew it from the stem (109).
3. Unscrew bolts (01C) from the yoke flange (126).
4. Unscrew the yoke bars (125) out of the valve body (101). Loosen the bolts (01J-02J) from the guiding plate (119) and remove it. Unscrew gland bolting/nuts (01B-02B) and remove them. Remove the gland flange (123) and packing follower (122).
5. Unscrew the bolts (01A-02A) and (01D-02D) from the retaining plate (118) and remove it from the body (101), while securing the stem (109) in place in order to prevent it from damaging.
6. After the retaining plate (118) has been removed, lower the stem (109) and bonnet (102) down into the body (101). Now remove the retainer (117) by tapping a punch tool through the designated holes provided in the bonnet area of the valve body (101).
7. Remove the gasket ring (114) and the gasket (003), together with the bonnet (102) and stem (109), by pulling the stem (109) out of the valve body (101).
8. Dis-assemble the "disc assembly" by removing the disc holder (113) from the stem (109). Afterwards remove the disc guide (142) and slide both discs (105) from the disc holder (113). It is important to mark the disc position (upstream / downstream).

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts for signs of damage, i.e. pitting, erosion or scratches:
 - A. SEATS (104) - Sealing surface
 - B. STEM (109) - Packing area
 - C. DISCS (105) - Sealing surface
 - D. BONNET (102) – Sealing surface



3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Install the first disc (105) into the disc holder (113), install the disc pin(s) (140) and springs (141) and place them into the corresponding socket located in the first disc (105). Afterwards place the second disc (105), now install the disc guide (142) to finalise the complete disc assembly.
5. Slide the complete disc assembly (113) onto the stem (109).
6. Place the bonnet (102) over the stem (109) and lower it into the valve body (101). Install a new gasket (003) into the valve body (101), with the gasket ring (114) on top of it.
7. Insert the retainer (117) in the designated groove. Pull the stem (109) towards the top of the valve and install the retainer ring (118) by placing it on top of the bonnet (102). Install the bolts (01D-02D) and (01A-02A) onto the body (101) and tighten them.
8. Place packing ring (121) and packing (004) over the stem (109) into the bonnet (102). Place the packing follower (122) over the stem (109). Place the gland flange (123) over the stem (109) and install the gland bolting (01B-02B). Evenly tighten the nuts (02B) preventing contact between the stem (109) & packing follower (122).
9. Place the guiding plate (119) on the designated area located at the stem (109) and secure the guiding plate (119) with the bolting (01J-02J).
10. Screw the yoke bars (125) into the valve body (101).
11. Place the yoke flange (126) on top of the yoke bars (125) and secure them with the hexagon socket bolts (01C).
12. Install the adapter plate (127) and finally install the gearbox / actuator (019) by rotating it counter clockwise.
13. In case of actuator operated valves, make sure to reset the limit switches.
14. Pressurise the system and check the packing (004) and bonnet gasket (003) for signs of leakage.

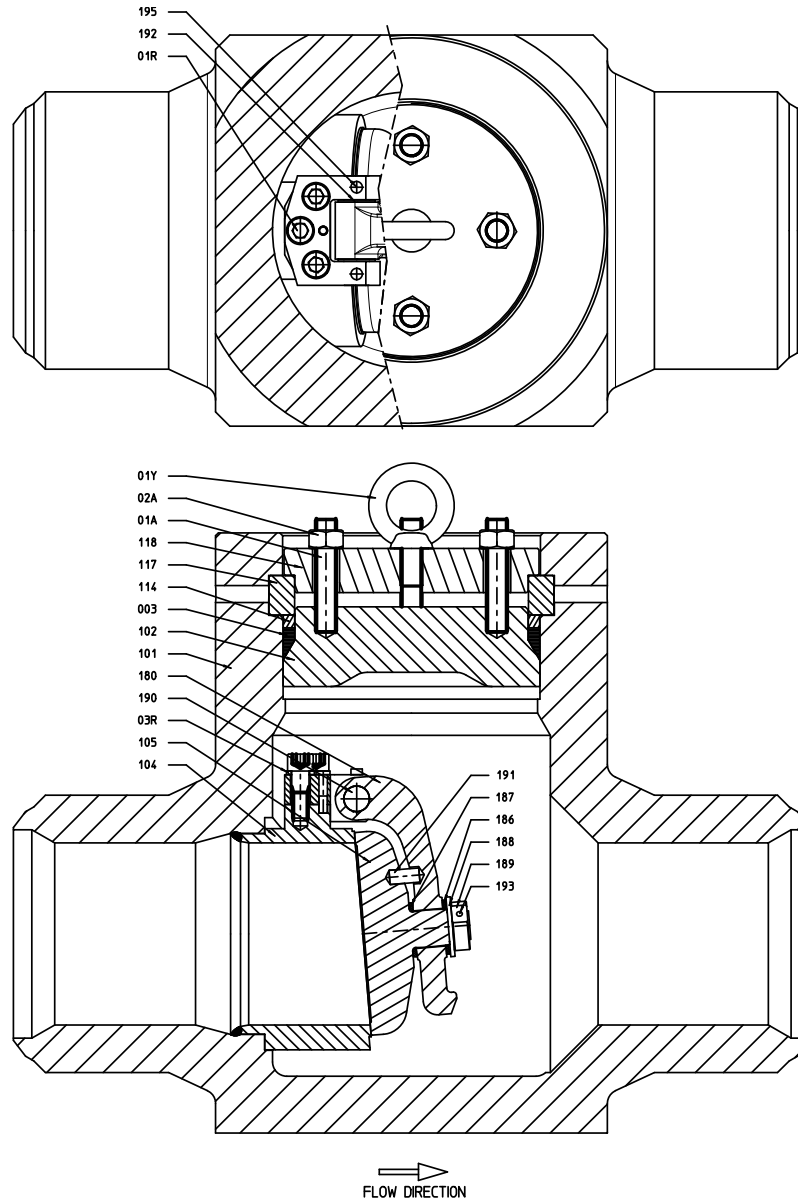


15. In case leakage is observed through the packing (004), tighten the nuts (02B) of the gland bolts (01B) carefully until the leaking stops. In case leakage through the bonnet (102) is observed, tighten the bolts (01A-02A) located on top of the retaining plate (118).
16. The valve is now ready for use.

HP Valves Oldenzaal BV

Medium & high pressure valves
in accordance with ASME, EN, BS and API

LBV HP SCHK ≤ 6" AND ≥ 900 LBS.



DISASSEMBLY & ASSEMBLY SWING CHECK VALVE

≥ 6" AND ≥ 900 LBS.

1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. Unscrew the nuts (02A) from the retaining plate (118) and remove the retaining plate (118) from the valve body (101).
3. Lower the bonnet (102) into the valve body (101) and remove the segmental ring (117), by tapping a punch tool through the designated disassembly holes provided in the bonnet area of the valve body (101).
4. Remove the gasket ring (114), gasket (003) and the bonnet (102) from the valve body (101).
5. Unscrew the bolt(s) (01R) from the seat ring (104) and remove the complete disc assembly (105) together with the disc arm (180) and bearing block (185) from the valve body (101).
6. Remove the collar pin (193) and unscrew the disc nut (189) to remove the disc (105) from the disc arm (180).
7. Remove the dowel pin(s) (195) prior to removing the hinge pin (190) from the bearing block (185).

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts signs of damage, i.e. pitting, erosion or scratches:
 - A. SEAT (104) - Sealing surface
 - B. DISC (105) - Sealing surface
 - C. BONNET (102) - Sealing surface
 - D. BEARING BLOCK (192) – Bore surface
 - E. HINGE PIN (190) – Hinge surface



3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Place the disc arm (180) in the bearing block (185) and slide the hinge pin washer(s) (192) in place.

LBV HP ≤ 6" AND ≥ 900 LBS.

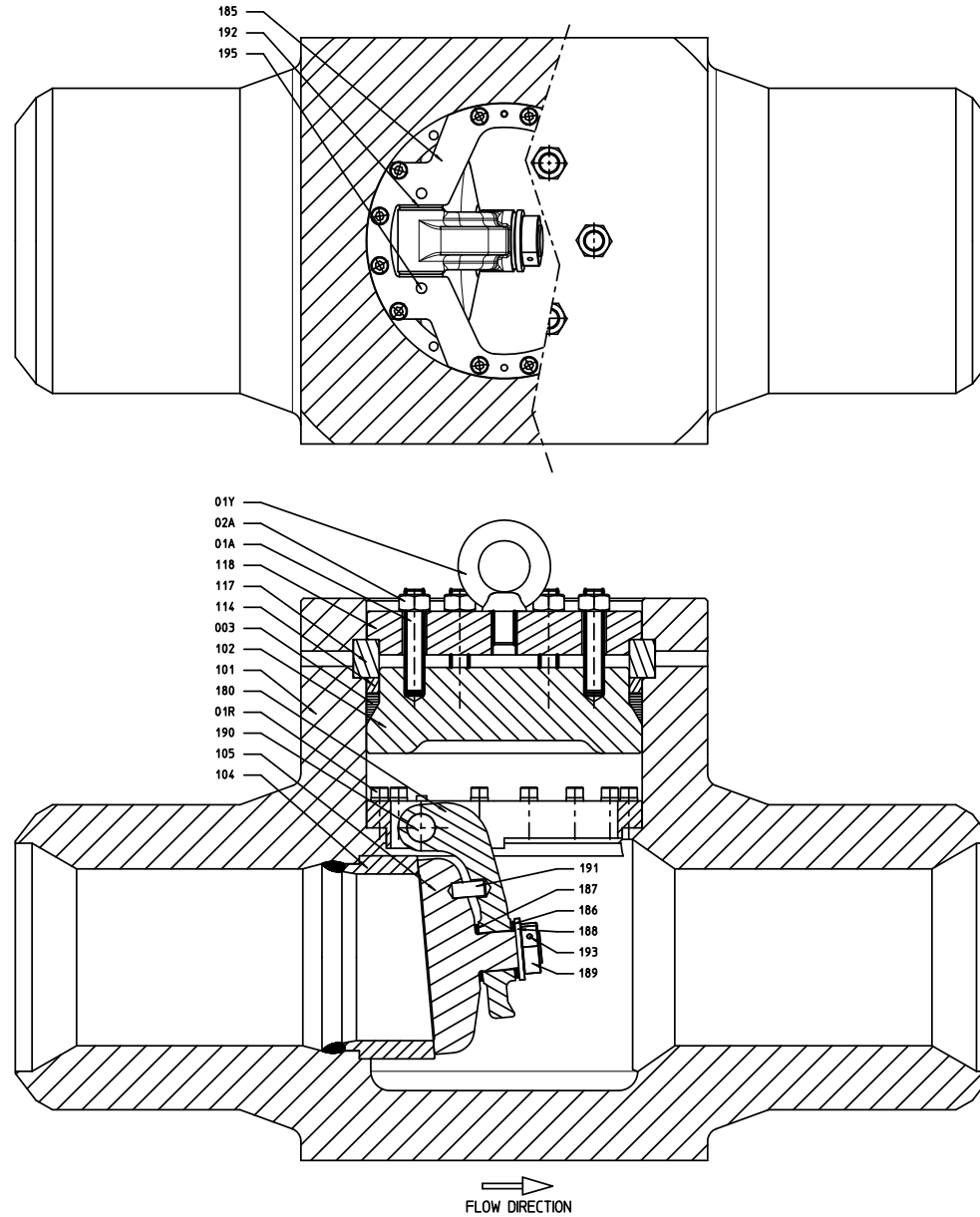
5. Now insert the hinge pin (190) through the bearing block (185) and disc arm (180) and secure the hinge pin by tapping the dowel pin(s) (195) in place.
6. Place the disc (105) into the disc arm (180) and secure it with the disc nut (189), washer (186) and collar pin (193).
7. Insert the complete disc assembly (105) into the valve body (101). Secure the bearing block (185) hand tight to the seat ring (104) using the bolt(s) (01R), now gently tap the dowel pin(s) (195) into the seat ring (104) to align the bearing block (185) correct against the seat ring (103) and tighten the bolt(s) (01R),
8. Insert the bonnet (102) into the valve body (101).
9. Install a **NEW** gasket (003) and insert the gasket ring (114) on top of it.
10. Place the segmental ring (117) into the valve body (101). Make sure the segments are located at such place, there is a segment placed in front of each disassembly hole.
11. Insert the bolts (01A) in the bonnet (102). Place the retaining plate (118) on top of the valve body (101). Now tighten the nuts (02A) to force the bonnet (102) into the gasket (003).
12. Pressurise the system and check the bonnet (102) for signs of leakage.



Important:

After starting up the system, once the valve has reached its working temperature and pressure, It is recommended to tighten the bolts (02A) into the retaining ring (118) to force the bonnet (102) into the gasket (003) for optimum sealing.

13. In case leakage of the bonnet (102) is observed, tighten the nuts (02A).
14. The valve is now ready for use.



DISASSEMBLY & ASSEMBLY SWING CHECK VALVE

8" AND ≥ 900 LBS.

1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. Unscrew the nuts (02A) from the retaining plate (118) and remove the retaining plate (118) from the valve body (101).
3. Lower the bonnet (102) into the valve body (101) and remove the segmental ring (117), by tapping a punch tool through the designated disassembly holes provided in the bonnet area of the valve body (101).
4. Remove the gasket ring (114), gasket (003) and the bonnet (102) from the valve body (101).
5. Unscrew the bolt(s) (01R) from the bearing block (185) and remove the complete disc assembly (105) together with the disc arm (180) and bearing block (185) from the valve body (101).
6. Remove the collar pin (193) and unscrew the disc nut (189) to remove the disc (105) from the disc arm (180).
7. Remove the dowel pin(s) (195) prior to removing the hinge pin (190) from the bearing block (185).

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts signs of damage, i.e. pitting, erosion or scratches:
 - A. SEAT (104) - Sealing surface
 - B. DISC (105) - Sealing surface
 - C. BONNET (102) - Sealing surface
 - D. BEARING BLOCK (185) – Bore surface
 - E. HINGE PIN (190) – Hinge surface



**IN CASE SEVERE DAMAGE IS OBSERVED,
USE REPLACEMENT PARTS INSTEAD!**

3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Place the disc arm (180) in the bearing block (185) and slide the hinge pin washer(s) (192) in place. Now insert the hinge pin (190) through the bearing block (185) and disc arm (180) and secure the hinge pin by tapping the dowel pin(s) (195) in place.

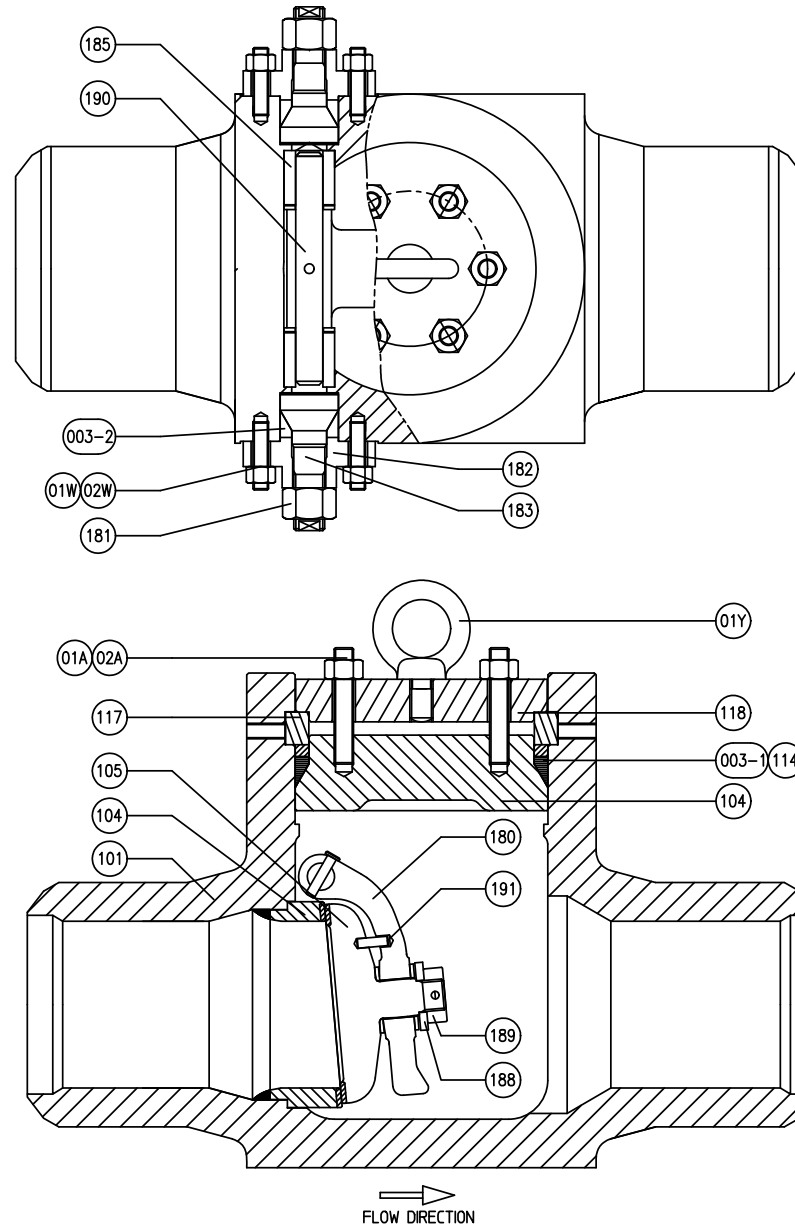
5. Place the disc (105) into the disc arm (180) and secure it with the disc nut (189), washer (186) and collar pin (193).
6. Insert the complete disc assembly (105) into the valve body (101). Secure the bearing block (185) hand tight to the seat ring (104) using the bolt(s) (01R) completed with washer(s) 03R).
7. Gently tap the dowel pins (195) into the valve body (101) to align the bearing block (185) correct against the valve body (101) and tighten the bolt(s) (01R) in star pattern,
8. Insert the bonnet (102) into the valve body (101).
9. Install a **NEW** gasket (003) and insert the gasket ring (114) on top of it.
10. Place the segmental ring (117) into the valve body (101). Make sure the segments are located at such place, there is a segment placed in front of each disassembly hole.
11. Insert the bolts (01A) through the retaining plate (118). Place the retaining plate (118) on top of the valve body (101). Screw the bolts (01A) into the bonnet (102) and place the nuts (02A).
12. Tighten the nuts (02A) to force the bonnet (102) into the gasket (003).
13. Pressurise the system and check the bonnet (102) for signs of leakage.



Important:

After starting up the system, once the valve has reached its working temperature and pressure, It is recommended to tighten the bolts (02A) into the retaining ring (118) to force the bonnet (102) into the gasket (003) for optimum sealing.

14. In case leakage of the bonnet (102) is observed, tighten the nuts (02A).
15. The valve is now ready for use.



DISASSEMBLY & ASSEMBLY SWING CHECK VALVE

≥10" AND ≥ 900 LBS.

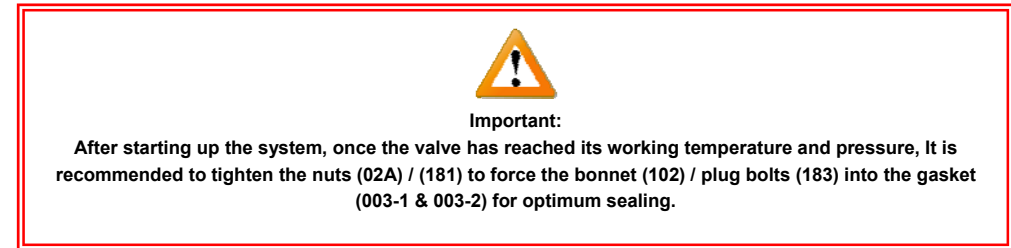
1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. Unscrew the nuts (02A) from the retaining plate (118) and remove the retaining plate (118) from the valve body (101).
3. Lower the bonnet (102) into the valve body (101) and remove the segmental ring (117), by tapping a punch tool through the designated disassembly holes provided in the bonnet area of the valve body (101).
4. Remove the gasket ring (114), gasket (003-1) and the bonnet (102) from the valve body (101).
5. Loosen the plug nut (181) approximately 10mm and gently tap the plug bolt (183) into the valve body (101). Now unscrew the plug bolt retainer (182) by loosening the bolting (01W-02W) and remove it together with the plug bolt (183) and the plug bolt gasket (003-2) from the valve body (101).
6. Repeat step 5 for the opposite plug bolt (183) as well.
7. Gently tap the dowel pin (195) from the disc arm (180) in order to separate the hinge pin (190) from the disc arm (180).
8. Now gently tap the hinge pin (190) from the valve body. Ensure the disc (105) is protected from damaging whilst removing the hinge pin (190).
9. Remove the complete disc assembly (105) together with the disc arm (180) from the valve body (101).
10. Remove the collar pin (193) and unscrew the disc nut (189) to remove the disc (105) from the disc arm (180).

INSPECTION PRIOR TO RE-ASSEMBLY

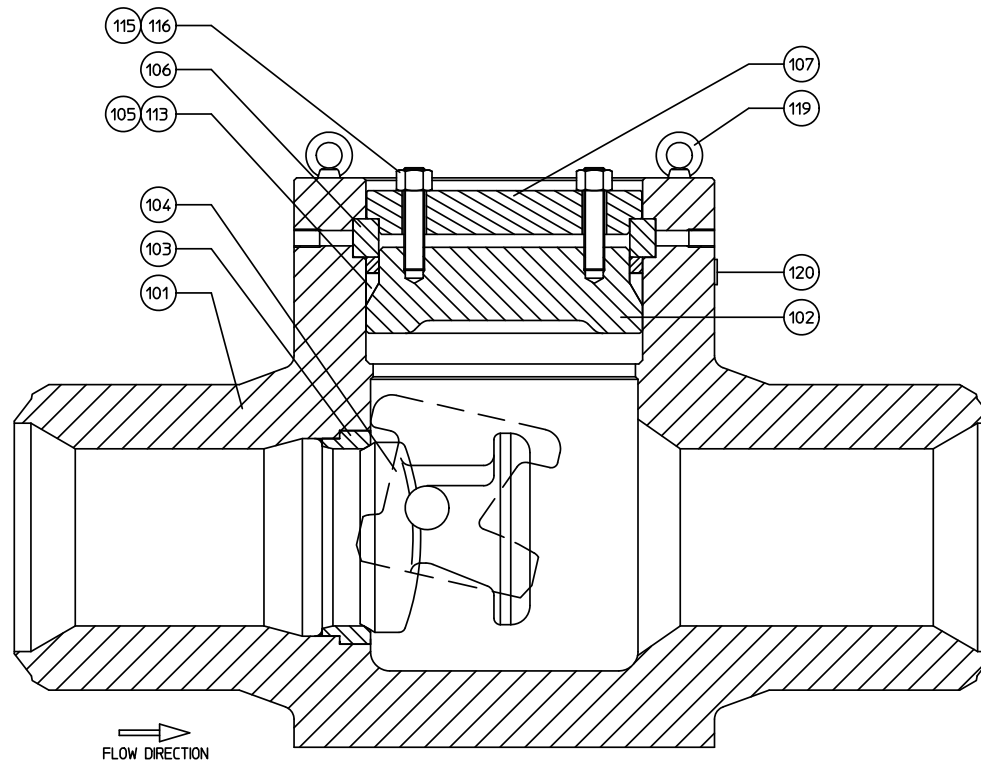
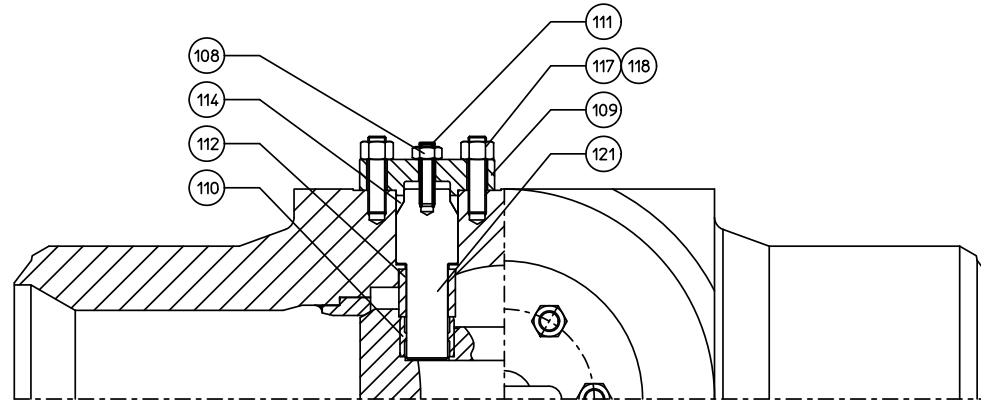
1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts signs of damage, i.e. pitting, erosion or scratches:
 - A. SEAT (104) - Sealing surface
 - B. DISC (105) - Sealing surface
 - C. BONNET (102) - Sealing surface
 - D. BEARING BLOCK (185) – Bore surface
 - E. HINGE PIN (190) – Hinge surface



3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Place the disc (105) into the disc arm (180) and secure it with the disc nut (189), washer (188) and collar pin (193).
5. Insert the complete disc assembly (105) into the valve body (101). Install the hinge pin (190) in to the valve body (101) and through the disc arm (180).
6. Gently tap the dowel pin (195) into the disc arm (180) and through the hinge pin (190) in order to secure the hinge pin (190) to the disc arm (180).
7. Insert the bonnet (102) into the valve body (101).
8. Install a **NEW** gasket (003-1) and insert the gasket ring (114) on top of it.
9. Place the segmental ring (117) into the valve body (101). Make sure the segments are located at such place, there is a segment placed in front of each disassembly hole.
10. Insert the bolts (01A) through the retaining plate (118). Place the retaining plate (118) on top of the valve body (101). Screw the bolts (01A) into the bonnet (102) and place the nuts (02A).
11. Tighten the nuts (02A) to force the bonnet (102) into the gasket (003-1).
12. Install both plug bolt(s) (183) in the valve body (101) and insert **NEW** plug gasket(s) (003-2). Now screw the plug bolt retainer(s) (182) in place and screw the plug nut(s) (181) to the plug bolt(s) (183).
13. Pressurise the system and check both the bonnet (102) and the plug bolt(s) (183) for signs of leakage.



14. In case leakage of the bonnet (102) is observed, tighten the nuts (02A). In case leakage of the plug bolt(s) (183) is observed, tighten the plug nuts (181).
15. The valve is now ready for use.



DISASSEMBLY & ASSEMBLY TILTING DISC CHECK VALVE

≥6" AND ≥ 900 LBS.

1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. Unscrew the nuts (116) from the retaining plate (107) and remove the retaining plate (107) from the valve body (101).
3. Lower the bonnet (102) into the valve body (101) and remove the segmental ring (106), by tapping a punch tool through the designated disassembly holes provided in the bonnet area of the valve body (101).
4. Remove the gasket ring (105), gasket (113) and the bonnet (102) from the valve body (101).
5. Loosen the plug nut (108) approximately 10mm and gently tap the plug bolt (111) into the valve body (101). Now unscrew the plug bolt retainer (109) by loosening the bolting (117-118) and remove it together with the plug bolt (111), plug bolt gasket (114), hinge pin (121) and washer (112) from the valve body (101).
6. Repeat step 5 for the opposite hinge pin (121) as well.
7. Ensure the disc (104) is protected from damaging whilst removing the hinge pin(s) (121).

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts signs of damage, i.e. pitting, erosion or scratches:
 - A. SEAT (103) - Sealing surface
 - B. DISC (104) - Sealing surface
 - C. BONNET (102) - Sealing surface
 - D. HINGE PIN(S) (121) – Hinge surface



**IN CASE SEVERE DAMAGE IS OBSERVED,
USE REPLACEMENT PARTS INSTEAD!**

3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Insert the complete disc assembly (104) into the valve body (101).
5. Install the washer(s) (112) and gently tap the hinge pin(s) (121) into the disc (104), check the disc (104) for free movement.
6. Insert the bonnet (102) into the valve body (101).

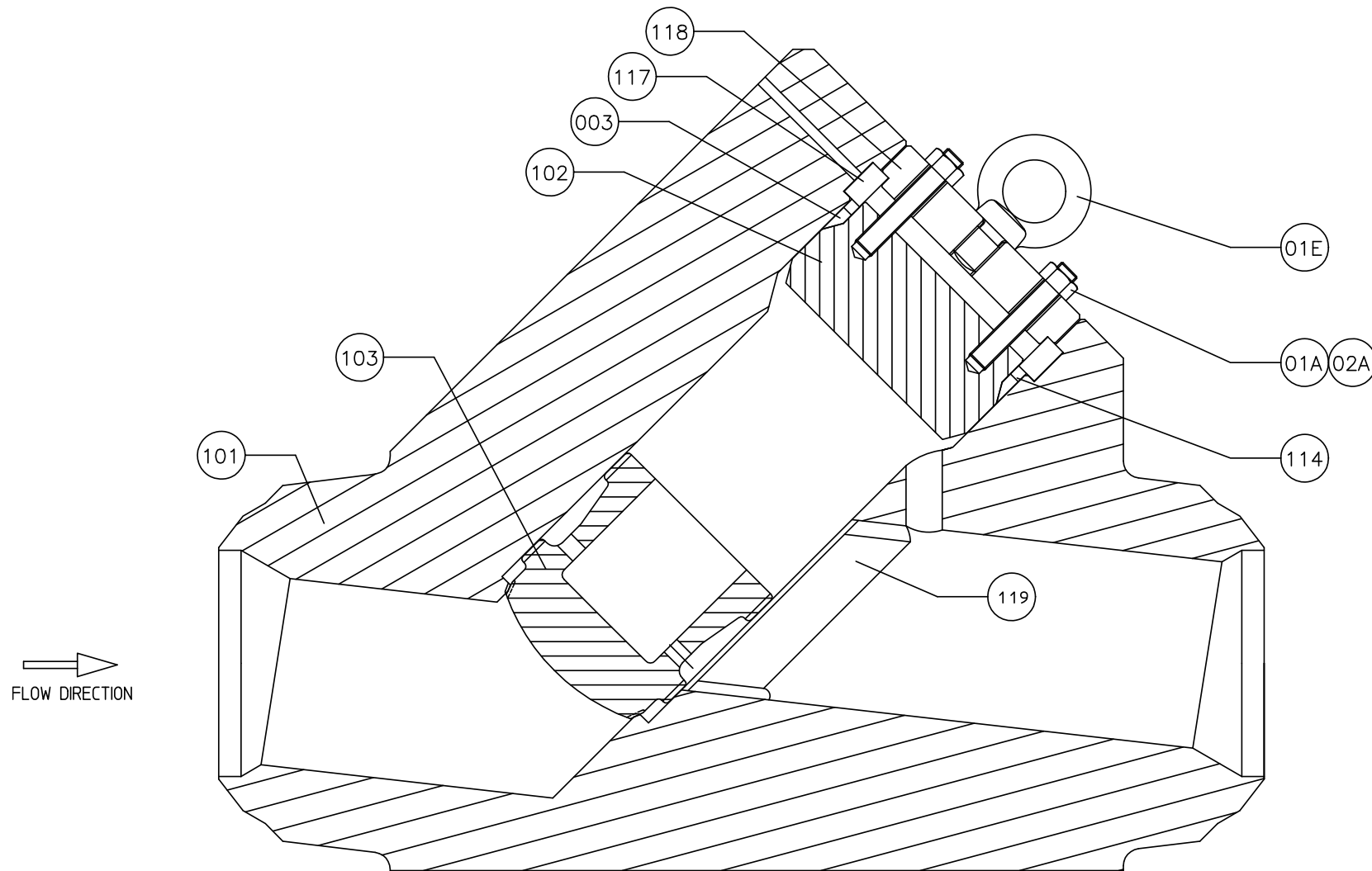
7. Install a **NEW** gasket (113) and insert the gasket ring (105) on top of it.
8. Place the segmental ring (106) into the valve body (101). Make sure the segments are located at such place, there is a segment placed in front of each disassembly hole.
9. Insert the bolts (115) through the retaining plate (107). Place the retaining plate (107) on top of the valve body (101). Screw the bolts (115) into the bonnet (102) and place the nuts (116).
10. Tighten the nuts (116) to force the bonnet (102) into the gasket (113).
11. Insert **NEW** plug gasket(s) (114) over the hinge pin(s) (121). Now screw the plug bolt retainer(s) (109) in place by evenly tightening bolting (117-118) and screw the plug nut(s) (108) to the plug bolt(s) (111).
12. Pressurise the system and check both the bonnet (102) and the hinge pin(s) (121) for signs of leakage.



Important:

After starting up the system, once the valve has reached its working temperature and pressure, It is recommended to tighten the nuts (116/108) to force the bonnet (102) / hinge pin(s) (121) into the gasket (113/114) for optimum sealing.

13. In case leakage of the bonnet (102) is observed, tighten the nuts (116). In case leakage of the hinge pin(s) (121) is observed, tighten the plug nuts (108).
14. The valve is now ready for use.



DISASSEMBLY & ASSEMBLY PISTON CHECK VALVE

≥6" AND ≥ 900 LBS.

1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. Unscrew the nuts (02A) from the retaining plate (118).
3. Remove the retaining plate (118) from the valve body (101).
4. Lower the bonnet (102) into the valve body (101) and remove the segmental ring (117), by tapping a punch tool through the designated disassembly holes provided in the bonnet area of the valve body (101).
5. Now the bonnet (102), gasket ring (114), gasket (003) and disc (103) can be removed from the valve body (101).

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts signs of damage, i.e. pitting, erosion or scratches:
 - A. SEAT (101) - Sealing surface
 - B. BONNET (102) – Sealing surface
 - C. DISC (103) - Sealing surface



**IN CASE SEVERE DAMAGE IS OBSERVED,
USE REPLACEMENT PARTS INSTEAD!**

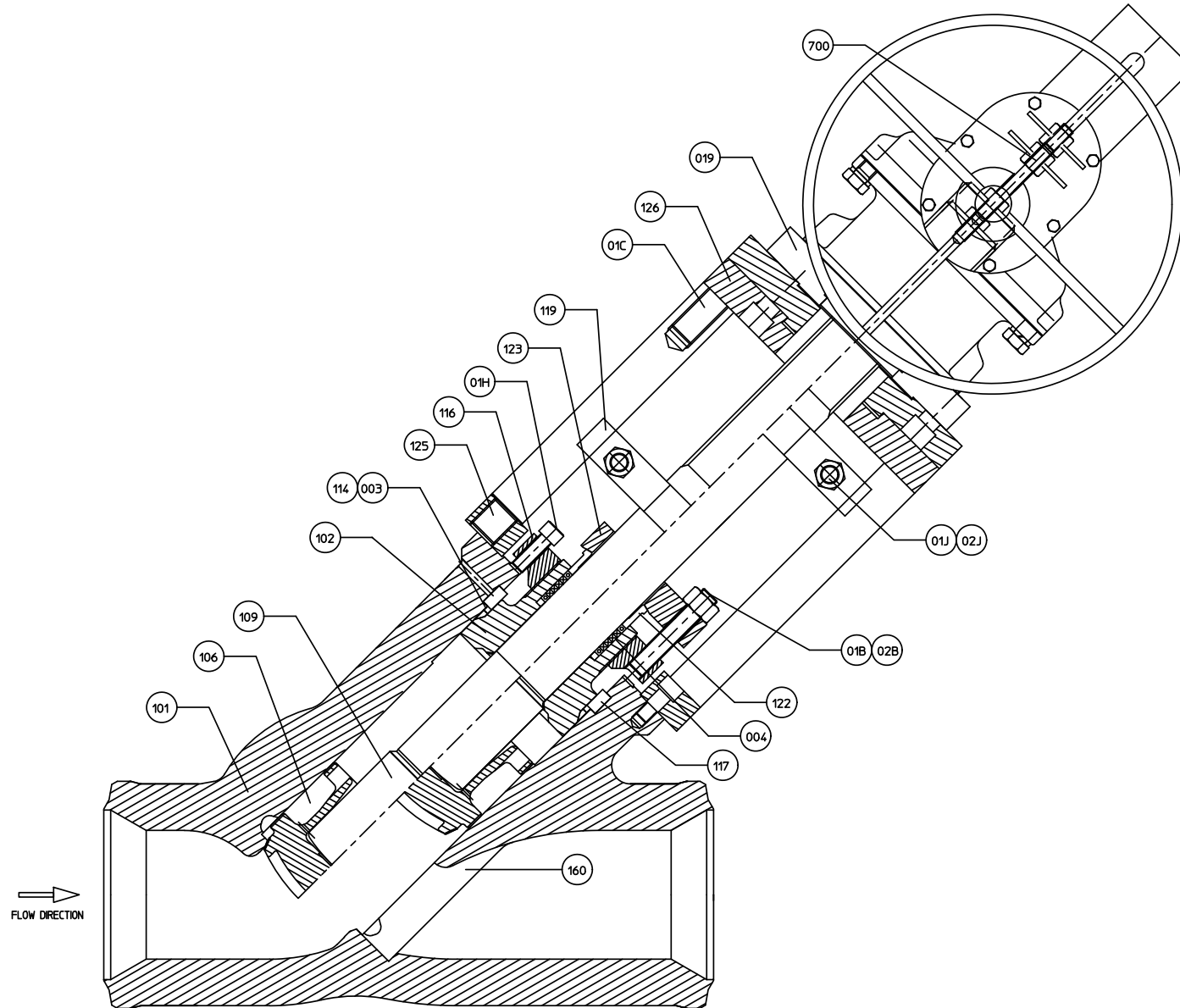
3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Insert the disc (103) into the valve body (101).
5. Insert the bonnet (102), **NEW** gasket (003) and gasket ring (114) into the valve body (101).
6. Lower the bonnet (102) into the valve body (101) and install the segmental ring (117) into the valve body (101). Make sure the segments are located at such place, there is a segment placed in front of each disassembly hole.
7. Insert the bolts (01A) through the retaining plate (118). Place the retaining plate (118) on top of the valve body (101). Screw the bolts (01A) into the bonnet (102) and tighten them evenly with the nuts (02A) in order to force the bonnet (102) into the gasket (003).
8. Pressurise the system and again tighten the nuts (02A).
9. Pressurise the system and check the bonnet (102) for signs of leakage.
10. In case leakage of the bonnet (102) is observed, tighten the nuts (02A).



Important:

After starting up the system, once the valve has reached its working temperature and pressure, It is recommended to tighten the bolts (02A) to force the bonnet (102) into the gasket (003) for optimum sealing.

11. The valve is now ready for use.



DISASSEMBLY & ASSEMBLY GLOBE AND STOP/CHECK VALVE

≥ 6" AND ≥ 900 LBS.

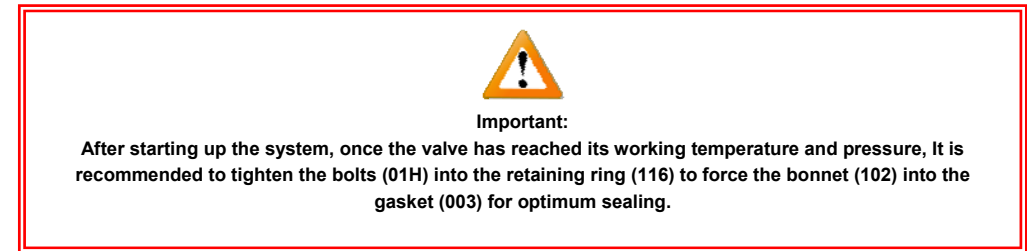
1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. Remove the gearbox / actuator (019), by unscrewing the bolts from the lower side of the yoke flange (126) and rotating the gearbox / actuator (019) clockwise to unscrew it from the stem (109).
3. Unscrew the hexagon bolts (01C) from the yoke flange (126).
4. Unscrew the yoke bars (125) from the valve body (101).
5. Remove the guidingplate (119) from the stem (109) by unscrewing the hexagon socket bolts (01J-02J).
6. Unscrew gland bolting/nuts (01B-02B) and remove them. Remove the gland flange (123) and packing follower (122).
7. Unscrew the hexagon bolts (01H) from the retaining plate (116) and remove the retaining plate (116) by unscrewing it from the bonnet (102), while securing the stem (109) in place in order to prevent it from damaging.
8. After the retaining plate (116) has been removed, lower the stem (109) and bonnet (102) down into the body (101). Now remove the segmental ring (117) by tapping a punch tool through the designated holes provided in the bonnet area of the valve body (101).
9. Remove the gasket ring (114) and the gasket (003), together with the bonnet (102) and stem (109), by pulling the stem (109) out of the valve body (101).
10. In case of a stop/check valve, the plug (106) shall be removed separately from the valve body (101).

INSPECTION PRIOR TO RE-ASSEMBLY

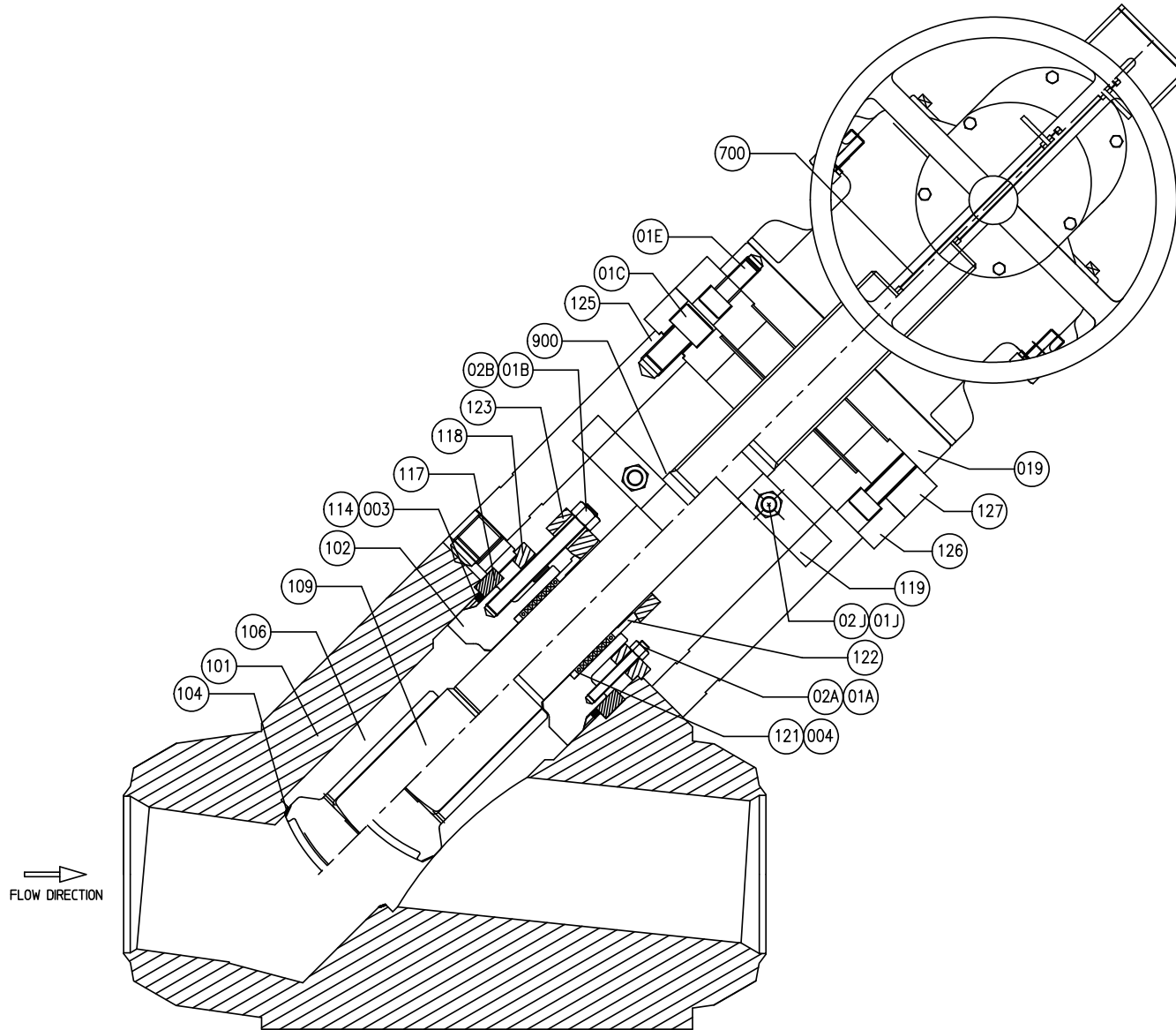
1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts for signs of damage, i.e. pitting, erosion or scratches:
 - A. SEAT (101) - Sealing surface
 - B. STEM (109) - Packing area
 - C. PLUG (106) - Sealing surface
 - D. BONNET (102) – Sealing surface



3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Insert the plug (106) into the valve body(101) and slide the stem (109) into the plug (106).
5. Place the bonnet (102) over the stem (109) and lower it into the valve body (101). Install a NEW gasket (003) into the valve body (101), with the gasket ring (114) on top of it.
6. Insert the segmental ring (117) in the designated groove. Make sure the segments are located at such place, there is a segment placed in front of each disassembly hole.
7. Pull the stem (109) towards the top of the valve and install the retaining plate (116) by mounting it to the bonnet (102). Install the hexagon bolts (01H) into the retaining plate (116) and tighten them evenly.
8. Place the NEW packing (004) over the stem (109) into the bonnet (102). Place the packing follower (122) over the stem (109). Place the gland flange (123) over the stem (109) and install the gland bolting (01B / 02B). Evenly tighten the nuts (02B) preventing contact between the stem (109) & gland (122).
9. Place the guiding plate (119) on the designated area located at the stem (109) and secure the guiding plate (119) with the bolting (01J-02J).
10. Screw the yoke bars (125) into the valve body (101) and place the yoke flange (126) on top of the yoke bars (125) and secure them with the hexagon socket bolts (01C).
11. Install the adapter and finally install the gearbox / actuator (019) by rotating it counter clockwise.
12. In case of actuator operated valves, make sure to reset the limit switches according to the OEM manual.
13. Pressurise the system and check the packing (009) and gasket (003) for signs of leakage.



14. In case leakage is observed through the packing (009), tighten the nuts (02B) of the gland bolts (01B) carefully until the leaking stops. In case leakage through the bonnet gasket (003) is observed, tighten the hexagon bolts (01H) located on top of the retaining ring (116).
15. The valve is now ready for use.



DISASSEMBLY & ASSEMBLY GLOBE AND STOP/CHECK VALVE

≥ 6" AND ≥ 900 LBS.

1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. Remove the gearbox / actuator (019), by unscrewing the bolts from the lower side of the yoke flange (126) and rotating the gearbox / actuator (019) clockwise to unscrew it from the stem (109).
3. Unscrew yoke bar bolts (01C) from the yoke flange (126).
4. Unscrew the yoke bars (125) from the valve body (101).
5. Remove the guiding plate (119) from the stem by unscrewing the hexagon socket bolts (01J-02J).
6. Unscrew gland bolting/nuts (01B-02B) and remove them. Remove the gland flange (123) and packing follower (122).
7. Unscrew the bonnet nuts (01A-02A) from the retaining plate (118) and remove the retaining plate (118) from the body (101), while securing the stem (109) in place in order to prevent it from damaging.
8. After the retaining plate (118) is removed, lower the stem (109) and bonnet (102) down into the body (101). Now remove the segmental ring (117) by tapping a punch tool through the designated holes provided in the bonnet area of the valve body (101).
9. Remove the gasket ring (114) and the gasket (003), together with the bonnet (102) and stem (109), by pulling the stem (109) out of the valve body (101).
10. In case of a stop/check valve, the plug (106) shall be removed separately from the valve body (101).

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts for signs of damage, i.e. pitting, erosion or scratches:
 - A. SEAT (101) - Sealing surface
 - B. STEM (109) - Packing area
 - C. PLUG (106) - Sealing surface
 - D. BONNET (102) – Sealing surface



3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.

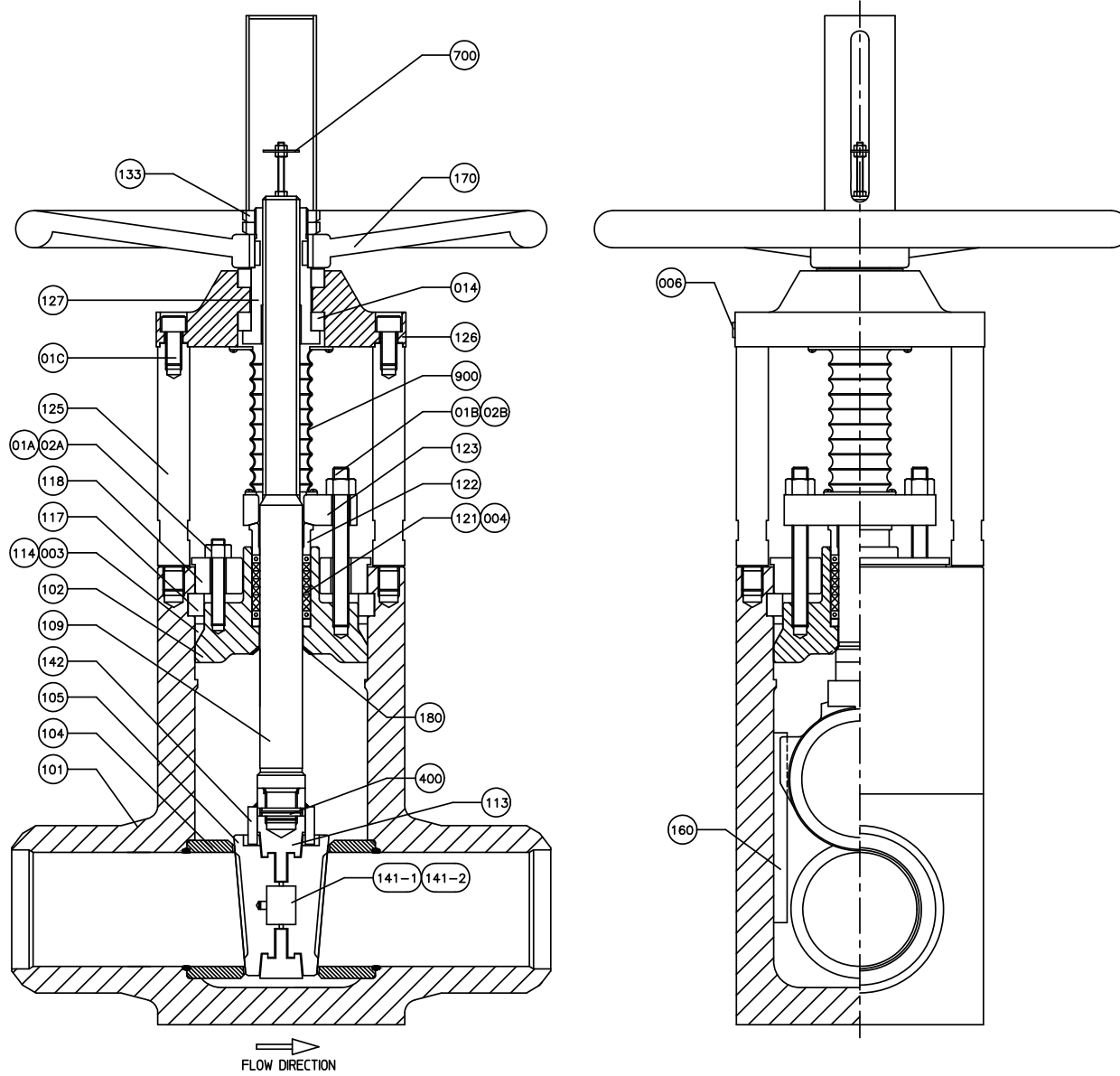
4. Insert the plug (106) into the valve body(101) and slide the stem (109) into the plug (106).
5. Place the bonnet (102) over the stem (109) and lower it into the valve body (101). Install a **NEW** gasket (003) into the valve body (101), with the gasket ring (114) on top of it.
6. Insert the segmental ring (117) in the designated groove. Make sure the segments are located at such place, there is a segment placed in front of each disassembly hole.
7. Pull the stem (109) towards the top of the valve and install the retaining plate (118) by placing it over the bonnet (102). Install the bolts (01A-02A) into the body (101) and tighten them evenly using the nuts (02A).
8. Place the **NEW** packing (009) over the stem (109) into the bonnet (102). Place the packing follower (122) over the stem (109). Place the gland flange (123) over the stem (109) and install the gland bolting (01B-02B). Evenly tighten the nuts (02B) preventing contact between the stem (109) & packing follower (122).
9. Place the guiding plate (119) on the designated area located at the stem (109) and secure the guiding plate (119) with the bolting (01J-02J).
10. Screw the yoke bars (125) into the valve body (101) and place the yoke flange (126) on top of the yoke bars (125) and secure them with the hexagon socket bolts (01C).
11. Install the adapter plate (127) and finally install the gearbox / actuator (019) by rotating it counter clockwise.
12. In case of actuator operated valves, make sure to reset the limit switches according to the OEM manual.
13. Pressurise the system and check the packing (009) and gasket (003) for signs of leakage.



Important:

After starting up the system, once the valve has reached its working temperature and pressure, it is recommended to tighten the bolts (01A-02A) into the retaining ring (118) to force the bonnet (102) into the gasket (003) for optimum sealing.

14. In case leakage is observed through the packing (009), tighten the nuts (02B) of the gland bolts (01B) carefully until the leaking stops. In case leakage through the bonnet gasket (003) is observed, tighten the bolts (02A) located on top of the retaining plate (118).
15. The valve is now ready for use.



DISASSEMBLY & ASSEMBLY DOUBLE DISC GATE VALVE

≥ 6" AND ≥ 900 LBS.

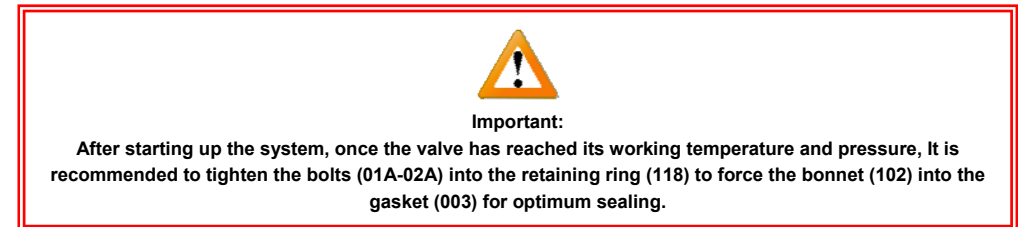
1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. For manual operated valves remove hand wheel nut (133), handwheel (170), parallel key and needle bearing (014).
For valves with a Gearbox or Electric Actuator, remove the Actuator, by unscrewing the bolts from the lower side of the yoke flange (126) and rotate the Gearbox or Electric Actuator clockwise.
3. Unscrew hexagon socket screws (01C) from the yoke flange (126).
4. For manual operated valves screw the yoke sleeve (127) together with the needle bearing (014) from the stem (109).
5. Unscrew the stands (125) out of the valve body (101). Unscrew the gland bolting/nuts (01B-02B) and remove them. Remove the gland flange (123) and packing follower (122) from the stem (109).
6. Unscrew the bolts (01A-02A) from the retaining ring (118) and remove the retaining ring (118) from the bonnet (102), while securing the stem (109) in place in order to prevent it from damaging.
7. After the retaining ring (118) has been removed, lower the stem (109) and bonnet (102) down into the body (101). Now remove the segmental ring (117) by tapping a punch tool through the designated holes provided in the bonnet area of the valve body (101).
8. Remove the gasket ring (114) and gasket (003), together with the bonnet (102) and stem (109), by pulling the stem (109) from the valve body (101).

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts for signs of damage, i.e. pitting, erosion or scratches:
 - A. SEAT (104) - Sealing surface
 - B. STEM (109) - Packing area
 - C. DISC(S) (105) - Sealing surface
 - D. BONNET (102) – Sealing surface

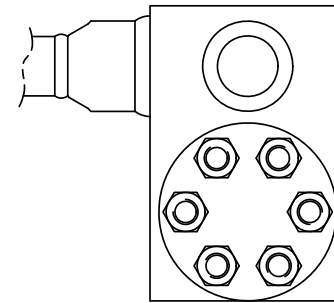
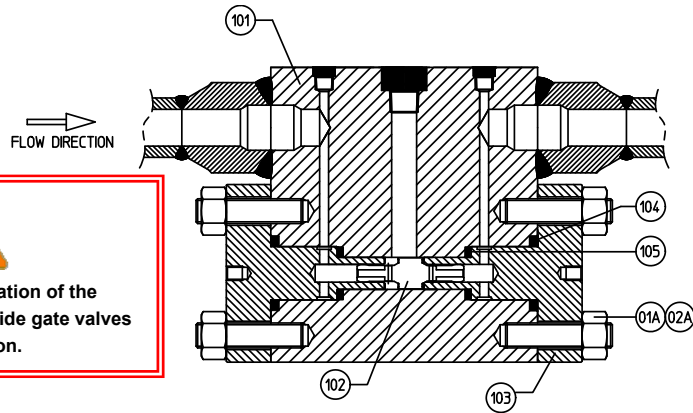



3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Place the bonnet (102) over the stem (109). Install a **NEW** gasket (003) into the valve body (101), with the gasket ring (114) on top of it.
5. Insert the segmental ring (117) in the designated groove. Make sure the segments are located at such place, there is a segment placed in front of each disassembly hole.
6. Pull the stem (109) towards the top of the valve and install the retaining ring (118) by placing it over the bonnet (102). Install the bolts (01A-02A) into the body (101) and tighten them evenly using the nuts (02A).
7. Place a **NEW** packing (004) and packing ring (121) over the stem (109) into the bonnet (102). Place the packing follower (122) over the stem (109). Place the gland flange (123) over the stem (109) and install the gland bolting (01A-02A). Evenly tighten the nuts (02A) preventing contact between the stem (109) & packing follower (122).
8. Screw the yoke bars (125) into the valve body (101) as indicated.
9. For manual operated valves screw the yoke sleeve (127) together with the needle bearing(s) (014) on the stem (109).
10. Place the yoke flange (126) on top of the yoke bars (125) and secure them with the hexagon socket bolts (01C).
11. For manual operated valves rotate the yoke sleeve (127) against the yoke flange (126), place the needle bearing (014), parallel key, handwheel (170) and secure it with the handwheel nut (133).
12. Pressurise the system and check the packing (004) and gasket (003) for signs of leakage.



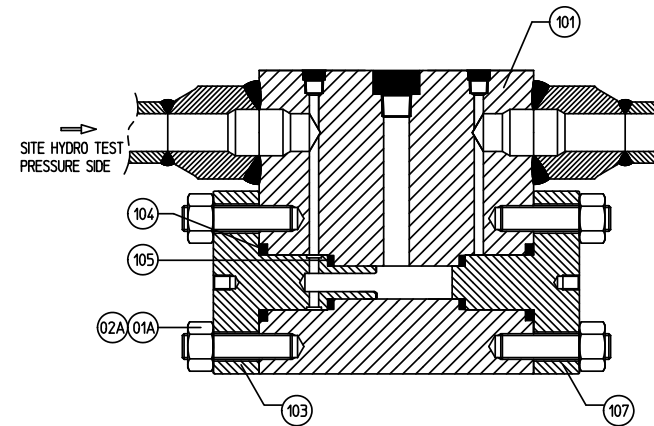
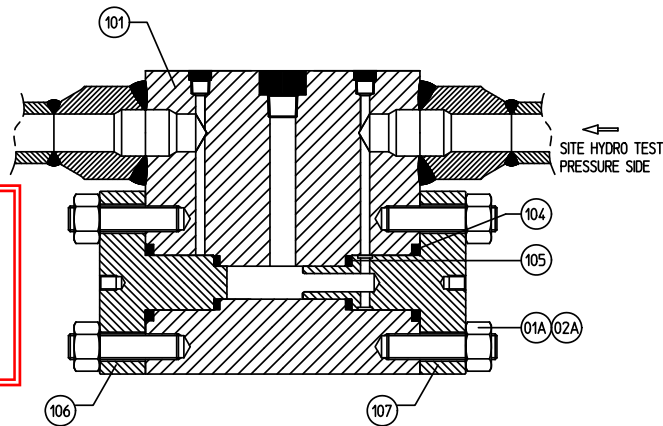
13. In case leakage is observed through the packing (004), tighten the nuts (02B) of the gland bolts (01B) carefully until the leaking stops. In case leakage through the bonnet (102) is observed, tighten the nuts (02A) located in retaining ring (118).
14. The valve is now ready for use.


BALANCER ON LB PSGV.





Standard configuration of the balancer for parallel slide gate valves in operation.





Configuration of the balancer for parallel slide gate valves during hydrostatic testing.

DETAIL BALANCER DUMMY INTERNALS MOUNTED FOR DOWN-STREAM EQUALIZING

FLOW DIRECTION

DETAIL BALANCER DUMMY INTERNALS MOUNTED FOR UP-STREAM EQUALIZING

FLOW DIRECTION

BALANCER ON LB PSGV.

DISASSEMBLY & ASSEMBLY BALANCER ON PARALLEL SLIDE GATE VALVE

1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. Unscrew the nuts (02A) from the bolts (01A) to loosen the plug flanges (103).
3. Remove both plug flanges (103) and gently push the disc (102) out of the valve body (101) using a punch.
4. Remove all gasket residue (104 & 105) from both the valve body (101) and the plug flange (103) mating surfaces.

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth.
2. Examine the following parts for signs of damage, i.e. pitting, erosion or scratches:
 - A. BODY (101) – Cleanliness
 - B. DISC (102) - Sealing surface
 - C. PLUG FLANGE (103) - Sealing surface



**IN CASE SEVERE DAMAGE IS OBSERVED,
USE REPLACEMENT PARTS INSTEAD!**

3. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
4. Insert the disc (102) inside the valve body (101) whilst ensuring the disc (102) is free to move from side to side.
5. Place new gaskets (104 & 105) on the plug flanges (103).
6. Install the plug flanges (103) on the valve body (101) and locate the nuts (02A) on the bolts (01A).
7. Tighten the nuts (02A) in a star pattern applying 95Nm.
8. Pressurise the system and check the gaskets (104 & 105) for signs of leakage.



Important:

After starting up the system, once the valve has reached its working temperature and pressure, it is recommended to tighten the nuts (02A) on bolts (01A) for optimum sealing.

9. In case leakage is observed through the gaskets (104 & 105), tighten the nuts (02A) of the bolts (01A) carefully until the leaking stops.
10. The valve is now ready for use.

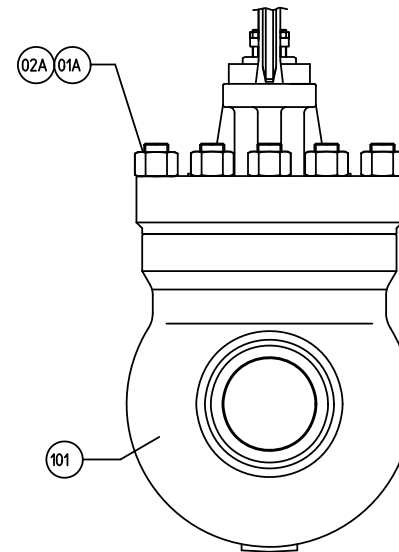
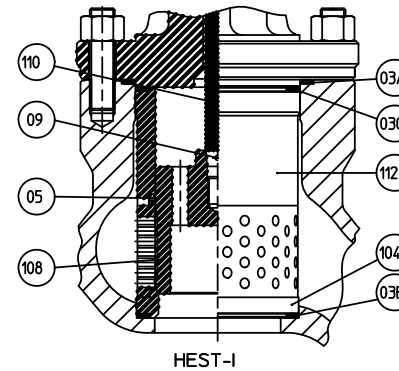
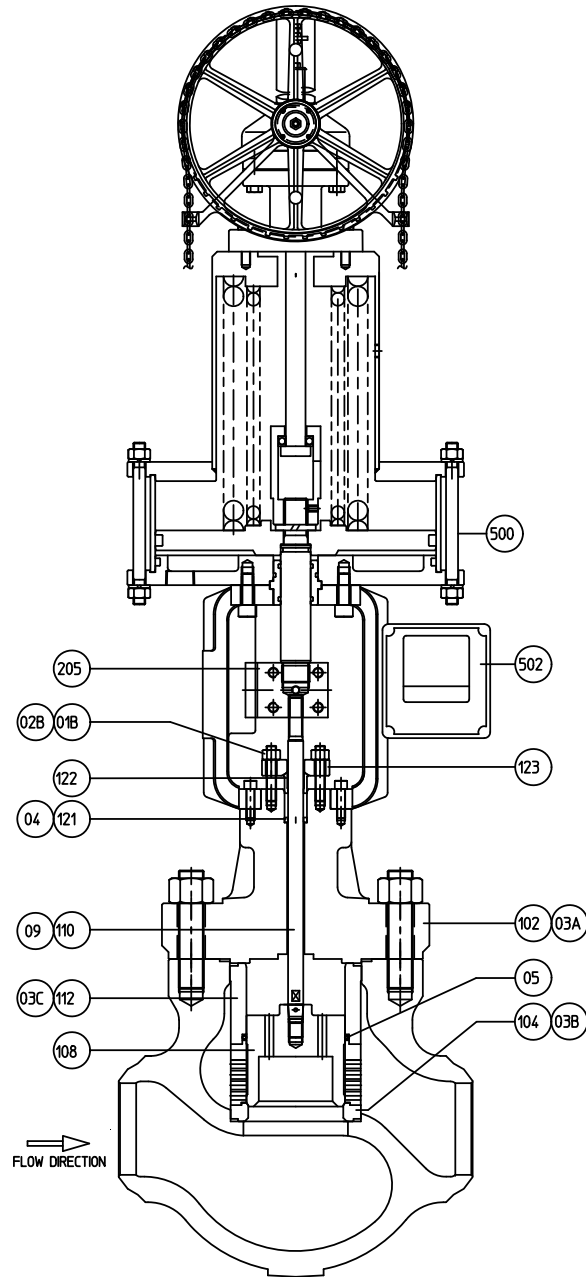
SPECIAL NOTE

When during hydrostatic testing the main parallel gate valve is considered as a pressure barrier, the balancer can be equipped with special dummy components in order to block-off any hydrostatic test fluid.

Instalment of dummy balancer internals should be performed in the same order as aforementioned, however without installing the disc (102). Please take notice of the orientation of dummy balancer parts and install the parts as needed for the applicable situation during hydrostatic testing.

When reassembling the balancer in its original or hydrostatic testing configuration, it is mandatory to always install new gaskets (104 & 105).

Please contact our dedicated sales team for your quotation of spare parts and/or dummy balancer internals.



DISASSEMBLY & ASSEMBLY CONTROL VALVE

≥ 4" AND ≥ 300 LBS.

1. Caution, before any attempt is made to disassemble, verify that the valve is sufficiently cooled down, depressurised, isolated from system pressure and secured against accidental pressurisation.
2. For valves fitted with Pneumatic Actuator, remove the Actuator (500), by disconnecting the air supply and disconnect all auxiliaries (i.e. solenoid valves, positioner, etc.).
3. Afterwards unscrew the bolts from the coupling (205).
4. Now unscrew the bolts from the lower side of the yoke flange (102) and carefully lift the Pneumatic Actuator from the valve.
5. Unscrew the gland nuts (01B) and remove them. Remove the gland flange (123) and packing follower (122) from the stem (110).
6. Unscrew all bonnet bolts/nuts (01B/02A) and remove them.
7. Carefully lift the bonnet (102) including the stem (110) and plug (108) from the valve body (101), make sure to lift this assembly in a straight line to prevent damage from occurring to the plug (108) and cage (112).
8. Remove the stem (110) from the bonnet (102) by sliding it out towards the bottom.
9. Remove the packing (04), optional lantern ring and packing ring (121) from the bonnet (102) by tapping them out with a drift from the bottom side of the bonnet (102).
10. Remove the bonnet gasket (03A) and the cage gasket (03C) from the valve body (101).
11. Remove the cage (112) together with the seat ring (104) and the seat ring gasket (03B) from the valve body (101). On large control valves the cage (112) is provided with threaded holes, designated for installation of eye bolts / lifting eyes.

INSPECTION PRIOR TO RE-ASSEMBLY

1. Thoroughly clean all parts with solvent and a clean cloth and remove gasket residue from mating- and recess surfaces.
2. Examine the following parts for signs of damage, i.e. pitting, erosion or scratches:
 - A. SEAT RING (104) - Sealing an Gasket surface
 - B. CAGE (112) – Inside surface and ports.
 - C. PISTON RING (05) - Sealing surface
 - D. STEM (110) - Packing area
 - E. DISC (108) - Sealing surface
 - F. BONNET (102) – Sealing surface



**IN CASE SEVERE DAMAGE IS OBSERVED,
USE REPLACEMENT PARTS INSTEAD!**

3. Measure cage (112) clearance by performing the following measurements:
 - A. Assemble the trim without installing the stem (110), plug (108) and all gaskets.
 - B. Place a straight edge on top of the body-bonnet flange and measure the distance between the body-bonnet flange and the top of the cage. Record this measurement.
 - C. Measure the height of the compression lip provided on the bonnet. Record this measurement as well.
 - D. The first measurement should at least equal or exceed the second measure by 0~0.25mm. In case measurements fail to comply the above stated, the HP Valves service coordinator should be consulted for instructions.
4. Remove all assembled trim from the valve body (101). After removal install a new seat gasket (03B) and place the seat ring (104) on top of it whilst making sure it fits neatly in place.
5. Insert the cage (112) into the valve body (101) and locate it over the raised lip provided on the seat ring (104). Make sure to arrange the cage ports in such manner, they are not directly in line with the valve inlet connection. Afterwards install a new cage gasket (03C) on top of the cage (112).
6. Lubricate all threaded parts with high temperature grease, i.e. Molykote HCS.
7. Install the stem (110) and the disc (108) without the piston rings (05) by lowering it inside the cage (112). It is recommended to check the sealing capabilities of the disc (108) on the seat ring (104) by applying engineering blue and check for a positive seat print. In case sealing is found to be insufficient, the disc (108) should be lapped on the seat ring (104) surface until satisfactory seating is achieved. After lapping all parts should be thoroughly cleaned again.
8. Install new piston rings (05) in the designated slots provided in the disc (108). Make sure to perform this step with caution, since the piston rings (05) are fragile and easy to snap when handled without special care.
9. Install the stem (110) and the disc (108) completed with the piston rings (05) by lowering it inside the cage (112).
10. Place a new bonnet gasket (03A) on top of the valve body-bonnet flange and carefully lower the bonnet (102) over the stem (110) until it is flush with the valve body (101) and the bonnet compression lip is located on top of the cage (112).
11. Lubricate all bonnet studs (01A) and hand tighten the bonnet nuts (02A).
12. Operate the valve by moving the stem (110) up and down several times, in order to ensure all trim parts are properly aligned.
13. Fully tighten the bonnet nuts (02A) in a "star" pattern, whilst applying the correct torque value (reference is made to table 1). Afterwards ensure the valve body (101) is in metal-to-metal contact with the bonnet (102) all way around.
14. Slide the new packing (04) over the stem (110) and insert it inside the stuffing box provided in the bonnet (102). If a valve is equipped with a lantern ring, this lantern ring should be placed on top of the first 2 or 3 packing rings and followed by the remaining 2 or 3 packing rings. During instalment of the packing rings (04) it is important to regularly compress the packing rings (04) using a tamping tool. Upon installation of all packing rings (04) a visual confirmation for clear signs of contact between the packing (04) and the stem (110) is mandatory.
15. Install the packing follower (122) and the gland flange (123) sliding it over the stem (110). Lubricate the gland nuts (01B) and gland bolts (02B) and tighten them applying the mentioned torque values.

Valve Pressure Class	Recommended Torque
< 600 LBS	11 +/- 3 Nm
≥ 600 LBS	19 +/- 3 Nm

16. After starting up the system, once the valve has reached its working temperature and pressure, It is recommended to tighten the gland bolting (01B-02B).

NOTE: In case the valve is equipped with PTFE type packing, special installation instructions are applicable. These instructions will be provided in case required.

17. Place the pneumatic actuator (500) on top of the yoke flange (102) and screw in the bolts from the lower side of the yoke flange (102) into the pneumatic actuator (500).
18. Afterwards ensure the valve disc (108) is in contact with the valve seat (104) and lower the pneumatic actuator piston rod to install the bolts to the stem coupling (205) and tighten them applying the following torque values.

Screw Size	Recommended Torque
M8 x 1.0	20 Nm
M10 x 1.0	40 Nm

19. Reconnect all auxiliaries (i.e. solenoid valves, positioner, etc.) and perform a functional test.
20. Pressurise the system and check the packing (04) and bonnet gasket (03A) for signs of leakage.
21. In case leakage is observed through the packing (04), tighten the nuts (02B) of the gland bolts (01B) carefully until the leaking stops. In case leakage through the bonnet (102) is observed, tighten the nuts (02A).



Important:

After starting up the system, once the valve has reached its working temperature and pressure, It is recommended to tighten the bolts (01A-02A) to force the bonnet (102) to the bonnet gasket (03A) for optimum sealing.

22. The valve is now ready for use.